

REMARKS

Claims 1 and 3 are presently pending in this application. Claim 1 has been amended to incorporate the subject matter of claim 2. Claims 2 and 4 have been canceled, without prejudice. No new matter has been added to the application by the above amendments.

At page 2 of the Office Action, claim 1 has been rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 6,020,276 to Hoyes et al. ("Hoyes et al."). Hoyes et al. allegedly discloses a material stock wherein the tape is at least one of: exfoliated graphite, vermiculite, polycarbon, graphite, PTFE, low density or expanded PTFE, filled PTFEs, mica, ceramic fiber tapes and papers including graphite filled paper, cellulose based gasket papers, automotive gasket paper (col. 4, lines 37-42) and a reinforcement which can be embedded into the surface or body of the tape, a surface coating of a plastic material deposited on one or more faces of the tape, or a layer of plastic material laminated to the tape (col. 2, lines 21-27). The reinforcement can be a plastic, inorganic (mineral), or fibrous material which is considered to be a base material (col. 5, lines 41-45). Hoyes et al. allegedly discloses that, due to the low density of the material stock, it may be easily impregnated with lubricant, sealant or adhesive material such as PTFE, graphite, molybdenum disulphide and silicone compounds, plastic resins and rubbers (col. 3, lines 29-33). Thus, the rejection contends that Hoyes et al. discloses water swelling mineral stuck or impregnated in a base material.

Applicants respectfully traverse this rejection and request that the rejection be reconsidered and withdrawn.

In order to support an anticipation rejection under §102(b), each and every element of the claimed invention or its substantial equivalent, must be found within the four corners of a single reference cited by the Examiner to anticipate. Hybritech Inc. v. Monoclonal Antibodies, Inc., 231 U.S.P.Q. 81, 90 (Fed. Cir. 1986).

Hoyes et al. discloses a material stock from which seals and packings may be formed. The material stock is relatively soft and compressible and has a density below 1.0 g/cc, wherein the material stock comprises a plurality of substantially flat section tapes that are interlaced together whereby both sides of each tape contact adjacent tapes, each tape of

said plurality having a width greater than 6 mm, and a reinforcement associated therewith. As discussed above, the tape is selected from at least one of the group comprising exfoliated graphite, vermiculite, polycarbon, graphite, PTFE, low density or expanded PTFE, filled PTFEs, mica, ceramic fiber tapes and papers.

Hoyes et al. does not disclose including a water swelling material in a seal, as set forth in claim 1 as amended. Further, Hoyes et al. does not disclose including a water-swelling material stuck to at least the surface of the gland packing base material of equal to or larger than $0.01 \mu\text{g}/\text{cm}^2$ as set forth in claim 1. The water-swelling mineral, such as water swelling mica, of the present invention has a colloidal forming ability and exhibits a thixotropic property when dispersed into water and can form a film by causing a sol to flow into a plate and drying the sol as described at page 8, lines 6-12 of the specification. The fluidity of the surface layer of the gland packing of the present invention is increased by the thixotropic property of the water-swelling mineral when a sliding resistance (a shearing force) is generated between the shaft of the apparatus and the gland packing as described at page 6, lines 14-18 of the specification. Hoyes et al. is completely silent with respect to the above water-swelling material. Hoyes et al. does not disclose this sticking limitation and seeks to solve the problem of leakage by using materials having inherent softness and compressibility (see col. 3, lines 3-10), instead of using swellable materials to cover the surface of the seal exposed to the fluid as in the present invention.

The subject matter of the Hoyes et al. invention relates to seals and packings for a valve stem which rotates only when operated, that is opened or closed as disclosed throughout the Hoyes invention, e.g., in column 1, line 5. To the contrary, the subject matter of the present invention relates to a gland packing used for sealing the shaft portion of a rotating and reciprocating apparatus which is continuously rotating or reciprocating when operated, such as the pump as described at page 1, lines 6-8 of the specification.

Moreover, the object of the invention of Hoyes et al. is to provide a stock material from which seals and packings may be made by a user, particularly, though not exclusively, in maintenance and/or emergency repair situations, which is amenable to the formation of range of seal and packing sizes from a single size of material stock as described in column 1, lines 41-46 of Hoyes et al.

On the contrary, the present invention provides a gland packing for a rotating and reciprocating apparatus which can maintain excellent sealing properties for a long period of time and can prevent an internal fluid from being contaminated, even in the case in which it is used for the shaft seal portion of a water-type fluid, as described at page 4, lines 16-22 of the specification.

Thus, the problem to be solved by Hoyes et al. is different from that of the present invention. Hoyes et al. sought to overcome the prior art problem of needing to keep a wide variety of seal sizes on hand as replacement seals for emergency repairs because the prior art seals were formed at high pressure from hard materials by having a stock material that could be used to form seals having a wide range of sizes (col. 1, lines 5-24 and 41-46). In contrast, the problem addressed by the present invention is to provide good sealing even upon exposure to a water-type fluid (page 4, lines 16-22). Hoyes et al. does not recognize the challenges of exposure to a water-type fluid.

The Examiner asserts that Hoyes et al. discloses that the low density of the material stock may be easily impregnated with lubricant, sealant or adhesive material, such as for example PTFE, graphite, molybdenum disulfide and silicone compounds, plastic resins and rubbers, and, therefore, concludes that Hoyes et al. discloses water swelling mineral stuck or impregnated in a base material.

However, Hoyes only exemplifies materials such as exfoliated graphite, vermiculite, polycarbon, graphite, PTFE or mica as a tape having a width greater than 6 mm to be interlaced, never exemplifies the water-swelling mineral of the present invention, and never recognizes the challenges of exposure to a water-type fluid.

The Examples clearly illustrate the advantage of using a gland packing having $0.05 \mu\text{g}/\text{cm}^2$ of the water-swelling mineral stuck to the surface (Example 1) in contrast with a gland packing without water-swelling mineral stuck to the gland packing surface (Comparative Example 1). The gland packing of Example 1 had 2.0 cc/min of leakage as opposed to that of comparative Example 1, which had 7.5 cc/min of leakage.

A person skilled in the art would not conceive the present invention from the teachings of Hoyes et al., because the subject matter, as well as the object between the present invention and the Hoyes invention completely differ from each other. Hoyes et al. does not disclose including a water-swelling material stuck to at least the surface of the gland

packing base material of equal to or larger than $0.01 \mu\text{g}/\text{cm}^2$ as set forth in claim 1, and thus does not teach every element of the claimed invention or its substantial equivalent. Accordingly, the rejection for lack of novelty under 35 U.S.C. §102(b) over Hoyes et al. is not properly supported.

Accordingly, Applicants respectfully request that the rejection of claim 1 under 35 U.S.C. §102(b) over Hoyes et al. be reconsidered and withdrawn.

Claim 2 has been rejected under 35 U.S.C. §102(b) as anticipated by or, in the alternative, under 35 U.S.C. §103(a) as obvious over Hoyes et al. Claim 2 has been canceled. Accordingly, Applicants respectfully request that the rejection of claim 2 under 35 U.S.C. §102(b) over Hoyes et al. be reconsidered and withdrawn.

Claims 3 and 4 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Hoyes et al. as applied to claims 1 and 2 above. In the rejection, it is acknowledged that Hoyes et al. does not specifically disclose a water-swelling mica mineral. However, it is alleged that Hoyes et al. describes the use of micas and vermiculite for seals or packing rings (col. 5, lines 8-29) and argued that one skilled in the art would interpret the Hoyes disclosure of mica to include a water-swelling mica.

Applicants respectfully traverse this rejection and request that the rejection be reconsidered and withdrawn.

Claim 4 has been canceled. Accordingly, Applicants respectfully request that the rejection of claim 4 under 35 U.S.C. §103(a) over Hoyes et al. be reconsidered and withdrawn.

The test of obviousness is usually interpreted in view of Graham v. John Deere Co., 383 U.S. 1 (1966) by determining: (1) the scope and content of the prior art; (2) differences between the prior art and the claims at issue; and (3) the level of ordinary skill in the pertinent art. When doing so, the prior art cited by the Examiner must show that one of ordinary skill in the art at the time the invention was made would understand that the scope and contents of the prior art encompass the claims at issue.

When making a rejection under 35 U.S.C. §103, the Examiner has the burden of establishing a *prima facie* case of obviousness. In re Fritch, 23 U.S.P.Q.2d 1780, 1783

(Fed. Cir. 1992). The Examiner can satisfy this burden only by showing an objective teaching in the prior art, or knowledge generally available to one of ordinary skill in the art, which would lead an individual to combine the relevant teachings of the references [and/or the knowledge] in the manner suggested by the Examiner. Id.; In re Fine, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988).

The mere fact that the prior art could be modified does not make the modification obvious unless the prior art suggests the desirability of the modification. In re Fritch, 23 U.S.P.Q.2d at 1784; In re Laskowski, 10 U.S.P.Q.2d 1397, 1398 (Fed. Cir. 1989); In re Gordon, 221 U.S.P.Q. 1125, 1127 (Fed. Cir. 1984).

"It is impermissible to use the claimed invention as an instruction manual or 'template' to piece together the teachings of the prior art so that the claimed invention is rendered obvious....[o]ne cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention". In re Fritch, 23 U.S.P.Q.2d at 1784 (quoting In re Fine, 5 U.S.P.Q.2d at 1600).

"The ultimate determination of patentability must be based on consideration of the entire record, by a preponderance of evidence, with due consideration to the persuasiveness of any arguments and any secondary evidence". Manual of Patent Examining Procedure, (Rev. 1, Feb. 2003) §716.01(d) and In re Oetiker, 24 U.S.P.Q.2d 1443, 1444 (Fed. Cir. 1992).

Claim 3 depends from claim 1 and further specifies that the water-swelling mineral is water-swelling mica. Claim 3 is not obvious over the teachings of Hoyes et al. for the same reasons as discussed above with respect to claim 1. Hoyes et al. does not disclose including a water-swelling material stuck to at least the surface of the gland packing base material of equal to or larger than $0.01 \mu\text{g}/\text{cm}^2$ as set forth in claim 1. The water-swelling mica of the present invention has a colloidal forming ability and exhibits a thixotropic property when dispersed into water and can form a film by causing a sol to flow into a plate and drying the sol as described at page 8, lines 6-12 of the specification. The fluidity of the surface layer of the gland packing of the present invention is increased by the thixotropic property of the water-swelling mineral when a sliding resistance (a shearing force) is generated between the shaft of the apparatus and the gland packing as described at page 6, lines 14-18 of the specification. Hoyes et al. is completely silent with respect to the above

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water-swelling material. Hoyes et al. does not disclose this sticking limitation and seeks to solve the problem of leakage by using materials having inherent softness and compressibility (see col. 3, lines 3-10), instead of using swellable materials to cover the surface of the seal exposed to the fluid as in the present invention.

Accordingly, Applicants respectfully request that the rejection of claims 3 and 4 under 35 U.S.C. §103(a) over Hoyes et al. be reconsidered and withdrawn.

In view of the remarks above, reconsideration and withdrawal of the rejections and favorable allowance of all claims is respectfully requested.

Respectfully submitted,

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